

weather changes, which we follow from day to day by observation and the use of the daily weather map. In my course in meteorology we use Davis as a text-book, which is supplemented by Hann and other references, together with lectures and such explanations as are needed. Now that we have the apparatus, we expect to keep up a systematic record of weather changes. From the data thus supplied blank maps are filled out and completed. Especial emphasis is laid upon the climate of different regions, a subject which is treated of in the course in geography, following the course in meteorology. The MONTHLY WEATHER REVIEW is used daily for reference.

As many libraries, high schools, colleges, and universities, as well as individuals engaged in teaching meteorology, desire to obtain Bartholomew's Atlas of Meteorology, which is in itself a library of information, we take pleasure in communicating the information contained in a letter just received from the American agents:

The Atlas is published at \$17.50 net. If any copies are desired for educational institutions or for free public libraries, we can allow a discount of 25 per cent from this price, that being the duty paid to the Government. When the book is to be used in an institution of this kind, all that is necessary is to make an affidavit that it is to be used for educational purposes.

As the atlas weighs a little over 9 pounds, the purchaser can easily estimate the cost of carriage from Philadelphia. In general it can be sent by express cheaper than by mail.

#### OSCILLATIONS OF TEMPERATURE AT ANY ALTITUDE.

A correspondent recently asked what is known as to the variation of temperature at considerable altitudes above the earth's surface. D. Arthur Berson, the well-known aeronaut, suggested in 1894 that the variation in temperature at any altitude is connected with the variation at the earth's surface by a simple exponential formula, where  $e$  is the basis of natural logarithms and  $h$  is the altitude in meters;

$$T_h = T_0 e^{-\frac{h}{10000}}$$

According to this, if the variation whether diurnal or accidental, is  $1^\circ$  at the earth's surface its amount at other altitudes will be as in the accompanying table:

Altitude.	Variation.	Altitude.	Variation.
<i>Meters.</i>	<i>°</i>	<i>Meters.</i>	<i>°</i>
0	1.000	1500	0.223
500	0.607	1600	0.202
600	0.549	1700	0.183
700	0.497	1800	0.165
800	0.449	1900	0.150
900	0.407	2000	0.135
1000	0.368	2250	0.105
1100	0.333	2500	0.082
1200	0.301	3000	0.050
1300	0.272	4000	0.018
1400	0.247	5000	0.007

In his report on the results of recent aeronautic work,<sup>1</sup> Dr. Berson remarks that the formula seems still to hold good but will of course need some slight revision when we have collected a large number of observations at great altitudes.

#### A WATERSPOUT.

Dr. H. A. Alford of Dominica, W. I., under date of August 25, on the steamship *Fontabelle*, communicates the following:

On the 20th instant, at 7:30 a. m., a very large waterspout, from 600 to 700 feet in diameter at the base, was seen ahead of this ship in latitude  $38^\circ 26'$  north and longitude  $72^\circ 55'$  west as kindly determined for me by Captain Mann, and I forward the particulars to you.

The captain has kindly allowed me to take the following extract from his log, which may be useful:

"August 20, strong south-southeast wind to end of day; steamed south one-half east. August 21, strong south-southwest wind and heavy head sea for whole twenty-four hours; shipping heavy water on deck; steering south; midnight, wind moderated and sea went down."

The following were the positions of the ship at noon on August 20 and

21: August 20, latitude  $37^\circ 44'$  north; longitude  $72^\circ 40'$  west. August 21, latitude  $34^\circ 26'$  north; longitude  $70^\circ 56'$  west.

I shall be obliged if you will inform me whether the stormy weather we experienced was that of the northern segment of a West Indian hurricane.

The weather map of 8 a. m., August 20, shows a trough of low pressure extending along the entire Atlantic coast, with the lowest barometer in the Maritime Provinces, and a subordinate low area central about New York City. The waterspout observed by Dr. Alford was therefore nearly due southeast of this latter storm center, and consequently in the quadrant where both tornadoes and waterspouts are most frequently observed. It was to this slowly eastward moving area of low pressure, and not to a West Indian hurricane, that the winds and sea experienced by the *Fontabelle* may be ascribed.—Ed.

#### ILLNESS OF MR. CURTIS J. LYONS.

Mr. R. C. Lydecker, under date of July 31, announces that, on account of the serious illness of Mr. Curtis J. Lyons, Territorial Meteorologist for Hawaii, he has been appointed by the Surveyor General as Acting Territorial Meteorologist. Having been a member of Mr. Lyons's family for some years, deeply interested in meteorology, and frequently assisting him in his work, the duties of the office are not new to Mr. Lydecker, who will undoubtedly carry on the work according to the same principles that have guided Mr. Lyons.

#### LIGHTNING PHENOMENON.

The following from the Cleveland Leader is kindly communicated by Father Odenbach, of Ignatius College, in that city:

Geneva, Ohio, November 19.—A phenomenon was seen in Unionville between 5 and 6 o'clock yesterday afternoon, during the snowstorm. There was a flash of lightning, seeming to emanate from the snow itself, and illuminating surrounding buildings and objects quite brightly. It consisted of two almost simultaneous flashes, one stronger than the other, and of a purple and milky-white color. They were followed by a faint roll of thunder like the approach of a distant storm. Such a freak of nature was known to occur during a snowstorm twenty years or more ago.

#### THE BAROMETRIC DISTURBANCE IN THE DANISH WEST INDIES, NOVEMBER 22-29, 1903.

We are indebted to Mr. John T. Quinn, F. R. G. S. and Royal Gold Medalist, Inspector of Schools in the Danish West Indies, for an early copy of the *St. Croix Avis*, published at Christiansted, December 5, 1903, from which we print the following article written by him:

The following account of this great movement, which occupied just one week, namely, from Sunday the 22d to Sunday the 29th of November, is mainly based on notes taken in St. Thomas.

The first hint of the approach of the disturbance was given by the high clouds (cirrus, etc.) on the morning of Sunday the 22d. High clouds (cirro-stratus) had been noted on the 19th and 20th as coming from west-northwest, the wind and lower clouds at the same time moving from northeast. On the 21st, at 7:30 a. m., many narrow bands of cirrus were seen, radiating from the south and curving toward the east. Much cirro-stratus also appeared, and both kinds of clouds were moving from the west; but on Sunday morning there was a remarkable display of high clouds, in regard to which the following note was made at the time: "9:15 a. m. A very beautiful band of cirrus and cirro-stratus, stretching about east and west and nearly overhead, the shaft having many faint feathery radiations all looking east; the shaft pointing west and the band a little spreading, plume-like, toward the east. Could not separate the motion of the cirrus and cirro-stratus, the whole appearing to move together from west by south. The sky showed many cirrus shafts having same direction, and some independent patches of cirro-stratus. In one large and very fine patch, with waved silky fibers springing from it in several directions, there was a quantity of cirro-cumulus, but all (cirrus, cirro-stratus, and cirro-cumulus) seemed to be moving together in the same plane."

Cirrus clouds are known among sailors as "mare's tails," and it is well known that an abundance of such clouds is believed by them to in-

<sup>1</sup> Wissenschaftliche Luftfahrten, Vol. III, p. 120, 1900.